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EXAMINER	
BRIGGS, NATHANAEL R	

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2871	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/519,264	JACOBS ET AL.	
	Examiner	Art Unit	
	Nathanael Briggs	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 4 and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated.. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1, 13, 22, 27, 29, 31 are objected to because of the following informalities: The phrases "the or each region of the first set" and "the or each region of the second set" are confusing and awkward. Examiner suggests using the phrases, "each region of the first set" and "each region of the second set"; or "the first regions" and "the second regions", instead, for clarity. Appropriate correction is required.

3. Claim 24 is objected to because it recites dependency on claim 23 when claim 23 is dependent on claim 8. However, according to applicant's amendments, claim 23 is dependent on claim 22, which is dependent on claim 20, which is dependent on claim 19, which is dependent on claim 18, which is dependent on claim 1. Therefore, there is no possible dependency of claim 24 on claim 8. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 15, the term "reorientable" is unclear, and the specification does not shed light on a specific definition. From the description of the specification, two particular methods could fulfill the definition: a.) the entire polarizing plate is flipped 180° as per the specification; b.) the polarizing plate is electrically switchable, causing a reorientation of the liquid crystal molecules when an electric field is applied. Examiner invites applicant to further limit the definition of the word "reorientable" as used in the specification and claims.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by May et al. (US 5,548,427).

8. Regarding claim 1, May discloses an optical device (see figure 3, for instance) comprising an input polarizer (2) for passing light having a first polarization direction (2a), a polarization modifying element (4) for receiving light of the first polarization direction (2a) from the input polarizer (2), and an output polarizer (6) for analyzing light from the polarization modifying element (4), the polarization modifying element (4), comprising at least first (4b) and second (4a) regions, each first region (4b) changing the polarization of light from the input polarizer (2) to a second polarization direction different from the first polarization direction (2a) and each second region (4a) supplying light of a third polarization direction different from the second polarization direction, characterized in that the output polarizer (6) cooperates with the polarization modifying element (4) such that each first light path through each first region (4b) and the output polarizer (6) has substantially the same attenuation and phase change (column 3, lines 42-46) to light from the input polarizer (2) as each second light path through each second region (4a) and the output polarizer (6). Claim 1 is therefore unpatentable.

9. Regarding claim 2, May discloses the device as claimed in claim 1 (see figure 3, for instance), wherein the regions of the first (4b) and second (4b) sets are interleaved and comprise first and second parallel strips, respectively. Claim 2 is therefore unpatentable.

10. Regarding claim 4, May discloses the device of claim 1 (see figure 3, for instance), wherein the second and third polarization directions are substantially orthogonal (column 2, lines 56-58). Claim 4 is therefore unpatentable.

11. Regarding claim 5, May discloses the device of claim 1 (see figure 3, for instance), wherein the third polarization direction is the same as the first polarization direction (2a). Claim 5 is therefore unpatentable.

12. Claim 1-2 and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. (US 5,894,361).

13. Regarding claim 1, Yamazaki discloses an optical device (see figure 4, for instance) comprising an input polarizer (112) for passing light having a first polarization direction (113), a polarization modifying element (104) for receiving light of the first polarization direction (113) from the input polarizer (112), and an output polarizer (401) for analysing light from the polarization modifying element (104), the polarization modifying element (104), comprising at least first (108) and second (106) regions, each first region (108) changing the polarization of light from the input polarizer (112) to a second polarization direction different from the first polarization direction (113) and each second region (106) supplying light of a third polarization direction different from the second polarization direction, characterized in that the output polarizer (401) cooperates with the polarization modifying element (104) such that each first light path through each first region (108) and the output polarizer (401) has substantially the same attenuation and phase change to light from the input polarizer (112) as each second light path through each second region (106) and the output polarizer (401). Claim 1 is therefore unpatentable.

14. Regarding claim 2, Yamazaki discloses the device as claimed in claim 1 (see figure 4, for instance), wherein the regions of the first (108) and second (106) sets are

interleaved and comprise first and second parallel strips, respectively. Claim 2 is therefore unpatentable.

15. Regarding claim 4, Yamazaki discloses the device of claim 1 (see figure 4, for instance), wherein the second and third polarization directions are substantially orthogonal (column 3, lines 54-55). Claim 4 is therefore unpatentable.

16. Regarding claim 5, Yamazaki discloses the device of claim 1 (see figure 4, for instance), wherein the third polarization direction is the same as the first polarization direction (113). Claim 5 is therefore unpatentable.

17. Claim 1-5, 9-15, 17-18, and 32-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishiguchi (US 6,046,787).

18. Regarding claim 1, Nishiguchi discloses an optical device (see figure 5, for instance) comprising an input polarizer (101a) for passing light having a first polarization direction, a polarization modifying element (106) for receiving light of the first polarization direction from the input polarizer (101a), and an output polarizer (110) for analysing light from the polarization modifying element (106), the polarization modifying element (106), comprising at least first (106c) and second (106b) regions, each first region (106c) changing the polarization of light from the input polarizer (101a) to a second polarization direction different from the first polarization direction and each second region (106b) supplying light of a third polarization direction different from the second polarization direction, characterized in that the output polarizer (110) cooperates with the polarization modifying element (106) such that each first light path through each first region (106c) and the output polarizer (110) has substantially the same attenuation

and phase change to light from the input polarizer (101a) as each second light path through each second region (106b) and the output polarizer (110). Claim 1 is therefore unpatentable.

19. Regarding claim 2, Nishiguchi discloses the device as claimed in claim 1 (see figures 1 and 5, for instance), wherein the regions of the first (106c) and second (106b) sets are interleaved and comprise first and second parallel strips (11a, 11b), respectively. Claim 2 is therefore unpatentable.

20. Regarding claim 3, Nishiguchi discloses the device of claim 2 (see figures 2E2 and 5, for instance), and Jung further wherein the first strips (14a) have a first width and the second strips (14b) have a second width greater than the first width. Claim 3 is therefore unpatentable.

21. Regarding claim 4, Nishiguchi discloses the device of claim 1 (see figure 5, for instance), wherein the second and third polarization directions are substantially orthogonal (column 16, lines 39-41). Claim 4 is therefore unpatentable.

22. Regarding claim 5, Nishiguchi discloses the device of claim 1 (see figure 5, for instance), wherein the third polarization direction (106b) is the same as the first polarization direction (101a). Claim 5 is therefore unpatentable.

23. Regarding claim 9, Nishiguchi discloses the device of claim 1 (see figure 5, for instance), wherein the polarization modifying element (106) comprises a patterned retarder (column 16, lines 7-9) and the output polarizer (110) is arranged to transmit the same proportions of slow and fast axis components of light from the first and second sets of regions (106b,c). Claim 9 is therefore unpatentable.

24. Regarding claim 10, Nishiguchi discloses the device of claim 9 (see figure 5, for instance), wherein the output polarizer (110) is arranged to transmit only the slow axis component of light (column 16, lines 20-24) from the first and second sets of regions (106b,c). Claim 10 is therefore unpatentable.

25. Regarding claim 11, Nishiguchi discloses the device of claim 9 (see figure 5, for instance), wherein the retarder (106) comprises a photo-polymerised polymer (column 11, lines 40-43). Claim 11 is therefore unpatentable.

26. Regarding claim 12, Nishiguchi discloses the device of claim 9 (see figure 5, for instance), wherein the retarder (106) provides a half wave of retardation at a visible light frequency (column 13, lines 8-11). Claim 12 is therefore unpatentable.

27. Regarding claim 13, Nishiguchi discloses the device as claimed in claim 12 (see figure 5, for instance), wherein the slow axis of the first region (106c) is oriented at 45° to the first polarization direction (column 16, lines 30-34) and the slow axis of the second region (106b) is parallel to the first polarization direction. Claim 13 is therefore unpatentable.

28. Regarding claim 14, Nishiguchi discloses the device of claim 13 (see figure 5, for instance), characterized in that the output polarizer (110) transmits light having a polarization direction oriented at 45° to the first polarization direction (column 16, lines 30-34). Claim 14 is therefore unpatentable.

29. Regarding claim 15, Nishiguchi discloses the device of claim 14 (see figure 5, for instance), having an alternative mode of operation in which the output polarizer (110) is arranged to pass light from the regions (106b,c) of one of the first and second sets and

to attenuate light from the regions of the other of the first and second sets, characterized in that the output polarizer (110) is arranged substantially to block light from the other of the first and second sets in the alternative mode, and characterized in that the output polarizer (110) is reorientable for the alternative mode so as to transmit light having a polarization direction substantially orthogonal to the first polarization direction. Claim 15 is therefore unpatentable.

30. Regarding claim 17, Nishiguchi discloses the device of claim 12 (see figure 5, for instance), characterized in that the slow axis of the first region (106c) is parallel to the first polarization direction and the slow axis of the second region (9) is oriented at 45° to the first polarization direction (column 16, lines 30-34). Claim 17 is therefore unpatentable.

31. Regarding claim 18, Nishiguchi discloses the device of claim 1 (see figure 5, for instance), characterized by comprising a further polarization modifying element (112) between the input (101a) and the output (110) polarizers. Claim 18 is therefore unpatentable.

32. Regarding claim 32, Nishiguchi discloses the device as claimed in claim 18 (see figure 5, for instance), characterized in that the further element (112) is a polarization rotator. Claim 32 is therefore unpatentable.

33. Regarding claim 33, Nishiguchi discloses the device of claim 32 (see figure 5, for instance), wherein the slow axis of the first region (106c) is oriented at 45° to the first polarization direction and the slow axis of the second region (106b) of the second set is parallel to the first polarization direction, and characterized in that the rotator (112)

comprises at least one region which provides a polarization rotation of 45° (column 15, lines 65-67). Claim 33 is therefore unpatentable.

34. Regarding claim 34, Nishiguchi discloses the device of claim 33 (see figure 5, for instance), characterized in that the rotator (112) comprises a twisted nematic liquid crystal device (column 15, lines 65-67). Claim 34 is therefore unpatentable.

35. Regarding claim 35, Nishiguchi discloses the device of claim 34 (see figure 5, for instance), characterized in that the liquid crystal device (112) has an alignment direction (105a), at a liquid crystal surface nearer the input polarizer (101a), parallel to the first polarization direction and an alignment direction (105b), at a liquid crystal surface nearer the output polarizer (110), oriented at 45° to the first polarization direction. Claim 35 is therefore unpatentable.

36. Regarding claim 36, Nishiguchi discloses the device of claim 34 (see figure 5, for instance), characterized in that the liquid crystal device (112) has an alignment direction (105a), at a liquid crystal surface nearer the input polarizer (101a), oriented at 22.5° to the first polarization direction and an alignment direction (105b), at a liquid crystal surface nearer the output polarizer (110), oriented at 112.5° to the first polarization direction. Claim 36 is therefore unpatentable.

37. Regarding claim 37, Nishiguchi discloses the device of claim 34 (see figure 5, for instance), characterized in that the liquid crystal device (112) has an alignment direction (105a), at a liquid crystal surface nearer the input polarizer (101a), oriented at 12.5° to the first polarization direction and an alignment direction (105b), at a liquid crystal

surface nearer the output polarizer (110), oriented at 102.5° to the first polarization direction. Claim 37 is therefore unpatentable.

38. Regarding claim 38, Nishiguchi discloses the device of claim 32 (see figure 5, for instance), characterized in that the output polarizer (110) is arranged substantially to block light from the other (106b,c) of the first and second sets in the alternative mode, and characterized in that the polarization rotator (112) is disableable (no voltage state) for the alternative mode. Claim 38 is therefore unpatentable.

39. Regarding claim 39, Nishiguchi discloses a display (column 7, lines 6-10; see figure 5, for instance) characterized by comprising a device as claimed in claim 1. Claim 39 is therefore unpatentable.

40. Regarding claim 40, Nishiguchi discloses the display of claim 39 (see figure 5, for instance), havinga spatial light modulator (112). Claim 40 is therefore unpatentable.

41. Regarding claim 41, Nishiguchi discloses the display of claim 40 (see figure 5, for instance), wherein the modulator (112) is a liquid crystal spatial light modulator. Claim 41 is therefore unpatentable.

42. Regarding claim 42, Nishiguchi discloses the display of claim 39 (see figure 5, for instance), characterized by having an autostereoscopic mode (column 1, lines 62-67). Claim 42 is therefore unpatentable.

43. Regarding claim 43, Nishiguchi discloses the display of claim 42 (see figure 5, for instance), characterized in that the output polarizer (110) is arranged substantially to block light from the other (106a,b) of the first and second sets in the alternative mode,

and characterized in that the device (112) when in the alternative mode forms a front or rear parallax barrier. Claim 43 is therefore unpatentable.

Claim Rejections - 35 USC § 103

44. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

45. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung (US 7,002,642) in view of May et al. (US 5,548,427).

46. Regarding claim 1, Jung discloses an optical device (see figure 5A-B, for instance) comprising an input polarizer (108) for passing light having a first polarization direction (108a), a polarization modifying element (112) for receiving light of the first polarization direction (108a) from the input polarizer (108), and an output polarizer (116) for analysing light from the polarization modifying element (112), the polarization modifying element (112), comprising at least first (K) and second (J) regions, each first region (K) changing the polarization of light from the input polarizer (108) to a second polarization direction (112a) different from the first polarization direction (108a) and each second region (J) supplying light of a third polarization direction different from the second polarization direction (112a). However, Jung does not expressly disclose wherein the output polarizer cooperates with the polarization modifying element such that each first light path through each first region and the output polarizer has

substantially the same attenuation and phase change to light from the input polarizer as each second light path through each second region and the output polarizer.

47. Regarding claim 1, May discloses an optical device (see figure 3, for instance), wherein the output polarizer (6) cooperates with the polarization modifying element (4) such that each first light path through each first region (4a) and the output polarizer (6) has substantially the same attenuation and phase change to light from the input polarizer (2) as each second light path through each second region (4b) and the output polarizer (6).

48. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the polarizer alignment of May in the device of Jung. The motivation for doing so would have been to provide uniform light for displaying 3D images, as taught by May (column 1, lines 49-54). Claim 1 is therefore unpatentable.

49. Regarding claim 2, Jung in view of May discloses the device as claimed in claim 1 (see figures 5A-B, for instance), and Jung further discloses wherein the regions of the first (K) and second (J) sets are interleaved and comprise first and second parallel strips, respectively. Claim 2 is therefore unpatentable.

50. Regarding claim 3, Jung in view of May discloses the device of claim 2 (see figures 5A-B, for instance), and Jung further discloses wherein the first strips have a first width and the second strips have a second width greater than the first width.

51. Regarding claim 4, Jung in view of May discloses the device of claim 1 (see figures 5A-B, for instance), and Jung further discloses wherein the second and third polarization directions are substantially orthogonal (column 7, lines 15-17).

52. Regarding claim 5, Jung in view of May discloses the device of claim 1 (see figures 5A-B, for instance), and Jung further discloses wherein the third polarization direction (112a) is the same as the first polarization direction (108a). Claim 5 is therefore unpatentable.

53. Regarding claim 6, Jung in view of May discloses the device of claim 1 (see figures 5A-B, for instance), and Jung further discloses wherein an alternative mode of operation in which the output polarizer (116) is arranged to pass light from the regions (J, K) of one of the first and second sets and to attenuate light from the regions (J, K) of the other of the first and second sets (column 7, lines 18-30). Claim 6 is therefore unpatentable.

54. Regarding claim 7, Jung in view of May discloses the device of claim 6 (see figures 5A-B, for instance), and Jung further discloses wherein the one of the first and second sets (K, J) is the first set (K). Claim 7 is therefore unpatentable.

55. Regarding claim 8, Jung in view of May discloses the device of claim 6 (see figures 5A-B, for instance), and Jung further discloses wherein the output polarizer (116) is arranged substantially to block light from the other (J) of the first and second sets in the alternative mode (column 7, lines 48-56). Claim 8 is therefore unpatentable.

56. Regarding claim 9, Jung in view of May discloses the device of claim 1 (see figures 5A-B, for instance), and Jung further discloses wherein the polarization modifying element (112) comprises a patterned retarder (column 5, lines 58-67) and the output polarizer (116) is arranged to transmit the same proportions of slow and fast axis

components of light from the first and second sets of regions (K, J). Claim 9 is therefore unpatentable.

57. Regarding claim 10, Jung in view of May discloses the device of claim 9 (see figures 5A-B, for instance), and Jung further discloses wherein the output polarizer (116) is arranged to transmit only the slow axis component of light from the first and second sets of regions (K, J). Claim 10 is therefore unpatentable.

58. Regarding claim 11, Jung in view of May discloses the device of claim 9 (see figures 5A-B, for instance), and Jung further discloses wherein the retarder (112) comprises a photo-polymerised polymer (column 6, lines 4-13). Claim 11 is therefore unpatentable.

59. Regarding claim 12, in view of May Jung discloses the device of claim 9 (see figures 5A-B, for instance), and Jung further discloses wherein the retarder (112) provides a half wave of retardation at a visible light frequency (column 7, lines 8-12). Claim 12 is therefore unpatentable.

60. Regarding claim 13, Jung in view of May discloses the device as claimed in claim 12 (see figures 5A-B, for instance), and Jung further discloses wherein the slow axis of the or each region (K) of the first set is oriented at 45° to the first polarization direction and the slow axis of the or each region (J) of the second set is parallel to the first polarization direction (column 7, lines 40-46). Claim 13 is therefore unpatentable.

61. Regarding claim 14, in view of May Jung discloses the device of claim 13 (see figures 5A-B, for instance), characterized in that the output polarizer (116) transmits

light having a polarization direction oriented at 45° to the first polarization direction. Claim 14 is therefore unpatentable.

62. Regarding claim 15, Jung in view of May discloses the device of claim 14 (see figures 5A-B, for instance), having an alternative mode of operation in which the output polarizer (116) is arranged to pass light from the regions (K) of one of the first and second sets and to attenuate light from the regions (J) of the other of the first and second sets, characterized in that the output polarizer (116) is arranged substantially to block light from the other (J) of the first and second sets in the alternative mode, and characterized in that the output polarizer (116) is reorientable for the alternative mode so as to transmit light having a polarization direction substantially orthogonal to the first polarization direction (108a). Claim 15 is therefore unpatentable.

63. Regarding claim 16, May discloses an optical device (see figure 3, for instance), wherein the slow axis of the first region is oriented at 22.5° to the first polarization direction and the slow axis of the or each region of the second set is oriented at -22.5° to the first polarization direction.

64. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the oriented directions of May in the device of Nishiguchi. The motivation for doing so would have been to avoid unequal transmission losses through the retarder, as taught by May (column 3, lines 49-54). Claim 16 is therefore unpatentable.

65. **Claims 16 and 19-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiguchi (US 7,002,642) in view of May et al. (US 5,548,427).**

66. Regarding claim 16, Nishiguchi discloses the device of claim 12 (see figure 5, for instance). However, Nishiguchi does not expressly disclose wherein the slow axis of the first region is oriented at 22.5° to the first polarization direction and the slow axis of the or each region of the second set is oriented at -22.5° to the first polarization direction.

67. Regarding claim 16, May discloses an optical device (see figure 3, for instance), wherein the slow axis of the first region is oriented at 22.5° to the first polarization direction and the slow axis of the or each region of the second set is oriented at -22.5° to the first polarization direction.

68. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the oriented directions of May in the device of Nishiguchi. The motivation for doing so would have been to avoid unequal transmission losses through the retarder, as taught by May (column 3, lines 49-54). Claim 16 is therefore unpatentable.

69. Regarding claim 19, Nishiguchi discloses the device of claim 18 (see figure 5, for instance). However, Nishiguchi does not expressly discloses wherein the further element (112) is a further retarder.

70. Regarding claim 19, May discloses an optical device (see figure 3, for instance), wherein a further element (8) is a retarder (column 4, lines 8-11).

71. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 19 is therefore unpatentable.

72. Regarding claim 20, Nishiguchi in view of May discloses the device of claim 19 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the further retarder (8) provides a half wave of retardation at a visible light frequency (column 4, lines 8-11). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 20 is therefore unpatentable.

73. Regarding claim 21, Nishiguchi in view of May discloses the device of claim 20 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the further retarder (8) is a liquid crystal device. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 21 is therefore unpatentable.

74. Regarding claim 22, Nishiguchi in view of May discloses the device of claim 20 (see Nishiguchi figure 5; May figure 3, for instance), and Nishiguchi further discloses wherein the polarization modifying element (106) comprises a patterned retarder and the output polarizer (110) is arranged to transmit the same proportions of slow and fast axis components of light from the first and second sets of regions (106b,c), characterized in that the retarder (106) provides a half wave of retardation at a visible light frequency wherein the slow axis of the first region (106b,c) is oriented at 45° to the first polarization direction and the slow axis of the second region (106b) is parallel to the

first polarization direction. Furthermore, May further discloses that the further retarder (8) has a slow axis oriented at 22.5° to the first polarization direction. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 22 is therefore unpatentable.

75. Regarding claim 23, Nishiguchi in view of May discloses the device of claim 22 (see Nishiguchi figure 5; May figure 3, for instance), and Nishiguchi further discloses wherein the output polarizer (110) transmits light having a polarization direction parallel to the first polarization direction. Claim 23 is therefore unpatentable.

76. Regarding claim 24, Nishiguchi in view of May discloses the device of claim 23 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the output polarizer (6) is arranged substantially to block light from the other (4a) of the first and second sets in the alternative mode, and characterized in that the further retarder (8) and the output polarizer (6) are rotatable as a unit through 180° about an axis parallel to the slow axis of the or each region (4b) of the first set for the alternative mode. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 24 is therefore unpatentable.

77. Regarding claim 25, Nishiguchi discloses the device of claim 21 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the further

retarder (8) comprises at least one region whose slow axis is switchable between a first orientation substantially parallel to the first and second light paths and a second orientation substantially perpendicular to the first orientation. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 25 is therefore unpatentable.

78. Regarding claim 26, Nishiguchi in view of May discloses the device of claim 25 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the further retarder (8) is a Freedericksz cell. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 26 is therefore unpatentable.

79. Regarding claim 27, Nishiguchi discloses the device of claim 25 (see Nishiguchi figure 5; May figure 3, for instance), and Nishiguchi further discloses wherein the output polarizer (110) is arranged substantially to block light from the other (106c) of the first and second sets in the alternative mode, characterized in that the slow axis of the first region (106c) is oriented at 45° to the first polarization direction and the slow axis of the second region (106b) is parallel to the first polarization direction, and May further discloses wherein the first orientation is for the alternative mode, the second orientation is oriented at 22.5° to the first polarization direction (column 3, lines 12-13), and the

output polarizer (6) transmits light having a polarization direction perpendicular to the first polarization direction. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 27 is therefore unpatentable.

80. Regarding claim 28, Nishiguchi in view of May discloses the device of claim (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the slow axis of the or each region (4a,b) of the first set is oriented at 22.5° to the first polarization direction and the slow axis of the or each region (4a) of the second set is oriented at -22.5° (column 3, lines 11-13) to the first polarization direction, characterized by comprising a further polarization modifying element (8) between the input and the output polarizers (2, 6), and characterized in that the second orientation is for the alternative mode and is oriented at 67.5° to the first polarization direction and the output polarizer (6) transmits light having a polarization direction perpendicular to the first polarization direction. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder/polarizer configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 28 is therefore unpatentable.

81. Regarding claim 29, Nishiguchi in view of May discloses the device of claim 25 (see Nishiguchi figure 5; May figure 3, for instance), and Nishiguchi further discloses wherein the output polarizer (110) is arranged substantially to block light from the other

(106b) of the first and second sets in the alternative mode, characterized in that the slow axis of the first region (106b) is parallel to the first polarization direction and the slow axis of the second region (106c) is oriented at 45° to the first polarization direction, and May further discloses wherein the second orientation is for the alternative mode and is oriented at 22.5° to the first polarization direction and the output polarizer (6) transmits light having a polarization direction oriented at 45° to the first polarization direction. It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder/polarizer configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 29 is therefore unpatentable.

82. Regarding claim 30, Nishiguchi in view of May discloses the device of claim 20 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the further retarder (8) comprises at least one region whose slow axis is switchable between third and fourth orientations substantially perpendicular to the first and second light paths (column 3, lines 7-46). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder/polarizer configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 30 is therefore unpatentable.

83. Regarding claim 31, Nishiguchi in view of May discloses the device of claim 30 (see Nishiguchi figure 5; May figure 3, for instance), and May further discloses wherein the output polarizer (6) is arranged substantially to block light from the other (4b) of the

first and second sets in the alternative mode, wherein the slow axis of the first region (4b) is oriented at 22.5° to the first polarization direction and the slow axis of the second region (4a) is oriented at -22.5° to the first polarization direction (column 3, lines 11-12), and characterized in that the third orientation is perpendicular to the first polarization direction and the fourth orientation is for the alternative mode and is oriented at 67.5° to the first polarization direction (column 3, lines 15-24). It would have been obvious for one of ordinary skill in the art at the time of the invention to use the retarder/polarizer configuration of May in the device of Nishiguchi. The motivation for doing so would have been to quickly control the propagated image, as taught by May (column 5, lines 12-14). Claim 31 is therefore unpatentable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathanael Briggs whose telephone number is (571) 272-8992. The examiner can normally be reached on 8:30 AM to 5:00 PM (EST) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Nathanael Briggs
11/2/2006

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